

Claims

- [c1] 1. A heat sink structure suitable for a chip-packaging unit, comprising:
 - a heat spreader, having a top surface and a bottom surface, the bottom surface suitable for covering over the chip-packaging unit; and
 - at least one arcuate spring disposed on the bottom surface, wherein end portions of the arcuate spring are connected with the bottom surface, and a central area of the arcuate spring is further away from the bottom surface of the heat spreader and is in contact with a surface of the chip-packaging unit.
- [c2] 2. The heat sink structure according to claim 1, further comprising a plurality of hooks, wherein the hooks, at one end thereof, are fixed on a periphery of the bottom surface of the heat spreader, and, at another end thereof, are extended to and clipped on the chip-packaging unit.
- [c3] 3. The heat sink structure according to claim 1, wherein the heat spreader is made of copper, alloy of aluminum, or alloy of copper.

- [c4] 4. The heat sink structure according to claim 1, wherein the arcuate spring is fabricated along with the heat spreader.
- [c5] 5. The heat sink structure according to claim 1, wherein end portions of the arcuate spring are welded on the bottom surface of the heat spreader.
- [c6] 6. The heat sink structure according to claim 1, wherein end portions of the arcuate spring are bolted on the bottom surface of the heat spreader.
- [c7] 7. The heat sink structure according to claim 1, wherein end portions of the arcuate spring are locked on the bottom surface of the heat spreader.
- [c8] 8. The heat sink structure according to claim 1, wherein a plurality of grooves are disposed on a periphery of the heat spreader, for end portions of the arcuate spring being locked into the grooves.
- [c9] 9. A heat sink structure suitable for a chip-packaging unit, comprising:
 - a heat spreader, having a top surface and a bottom surface, the bottom surface suitable for covering over the chip-packaging unit;
 - a plurality of heat-dissipating fins disposed on the top surface; and

at least one arcuate spring disposed on the bottom surface, wherein end portions of the arcuate spring are connected with the bottom surface, while a central area of the arcuate spring is further away from the bottom surface of the heat spreader and is in contact with a surface of the chip-packaging unit.

- [c10] 10. The heat sink structure according to claim 9, further comprising a plurality of hooks, wherein the hooks, at one end thereof, are fixed on a periphery of the bottom surface of the heat spreader, and, at another end thereof, are extended to and clipped to the chip-packaging unit.
- [c11] 11. The heat sink structure according to claim 9, wherein a plurality of grooves are disposed on a periphery of the heat spreader, for end portions of the arcuate spring being locked into the grooves.
- [c12] 12. A chip-packaging unit comprising:
 - a package baseboard having a first surface and a second surface;
 - a chip disposed on the first surface of and is electronically connected to the baseboard; and
 - a heat sink structure covering on the chip, comprising:
 - a heat spreader having a top surface and a bottom surface;

at least one arcuate spring disposed on the bottom surface, wherein end portions of the arcuate spring are connected with a periphery of the bottom surface, and a central area of the arcuate spring is further away from the bottom surface of the heat spreader and is in contact with a surface of the chip; and
a plurality of hooks, at one end thereof fixed on a periphery of the bottom surface of the heat spreader, and at another end thereof extended to and clipped on the second surface of the package baseboard.

- [c13] 13. The chip-packaging unit according to claim 12, wherein the chip is electronically connected to the package baseboard via flip-chip bonding, and the arcuate spring is in contact with a back surface of the chip.
- [c14] 14. The chip-packaging unit according to claim 12, wherein the heat spreader is made of copper, alloy of aluminum, or alloy of copper.
- [c15] 15. The chip-packaging unit according to claim 12, wherein the arcuate spring is fabricated along with the heat spreader.
- [c16] 16. The chip-packaging unit according to claim 12, wherein end portions of the arcuate spring are welded on the bottom surface of the heat spreader.

- [c17] 17. The chip-packaging unit according to claim 12, wherein end portions of the arcuate spring are bolted on the bottom surface of the heat spreader.
- [c18] 18. The chip-packaging unit according to claim 12, wherein end portions of the arcuate spring are locked on the bottom surface of the heat spreader.
- [c19] 19. The chip-packaging unit according to claim 12, wherein a plurality of grooves are disposed on a periphery of the heat spreader, for end portions of the arcuate spring being locked into the grooves.